Abstract

A communications network monitoring system and method remotely determines the total bandwidth between any two nodes on the network as well as the available bandwidth between nodes at a given time. A remote host sends data packets to each of the two nodes. A reply is sent back to the remote host generating a delay time. A set of delay times for data packets of various sizes is generated at the host. The data set is then analyzed using a robust estimation method and a Bayesian analysis to determine the total bandwidth and the mean delay between the two nodes. Moreover, the available bandwidth for a time, t, can be estimated by first injecting traffic into the network from a remote traffic generator to develop an estimate of the traffic and a router characteristic parameter, γ. This constant and a Bayesian estimate of the $\alpha(t)$ are used to estimate the available bandwidth at any given time t.